

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-11. (Canceled)

12. (Previously Presented) A member for air motors in which the surface thereof, having a complex shape, is heated at 450 to 580°C in a mixed gas atmosphere comprising 50 to 95% of hydrogen, and 5-50% of nitrogen and hydrogen sulfide,

a DC voltage at 300 to 500V is applied relative to an anode

disposed in a vacuum chamber under reduced pressure and

a nitrosulphurization layer having a substantially uniform thickness of about 30-300 µm is formed on the surface, with a Vickers hardness of 800-1200,

by using a bright nitrogen diffusion method,

wherein said member is at least one of a rotor, cylinder, a front cylinder cover, and a rear cylinder cover; and

wherein the surface is heated along a heating cycle comprising raising the temperature to about 480°C over about one hour during which evacuation is conducted with no gas supply;

then maintaining said temperature of approximately 480°C in the presence of hydrogen gas without nitrogen or hydrogen sulfide;

then adding nitrogen and hydrogen sulfide to provide a gas mixture of approximately 80% hydrogen, 10% nitrogen, and 10% hydrogen sulfide and applying said DC voltage; and

then reducing the temperature over a period of about four hours in a nitrogen atmosphere substantially free of hydrogen and hydrogen sulfide, and

the resultant nitrosulphurization layer has a thickness of about 0.14 mm and a surface Vickers hardness varying between 1080 and 1150.

Claim 13. (Canceled)

14. (Currently Amended) A member for air motors in which the surface thereof, having a complex shape,
is heated at 450 to 580°C in a mixed gas atmosphere comprising 50 to 95% of hydrogen, and 5-50% of nitrogen and hydrogen sulfide,

a DC voltage at 300 to 500V is applied relative to
an anode
disposed in a vacuum chamber under reduced pressure
and
a nitrosulphurization layer having a substantially
uniform thickness of about 30-300 μ m is formed on the surface,
with a Vickers hardness of 800-1200,
by using a bright nitrogen diffusion method,
wherein said member is at least one of a rotor,
cylinder, a front cylinder cover, and a rear cylinder cover;
and
wherein any difference of Vickers hardness value
between the mean value and either the maximum value or the
minimum value is no greater than 100;
~~The member of claim 1~~ wherein the nitro-
sulfurization layer extends to a depth of 0.09 mm.

15. (Currently Amended) A member for air motors in
which the surface thereof, having a complex shape,
is heated at 450 to 580°C in a mixed gas atmosphere
comprising 50 to 95% of hydrogen, and 5-50% of nitrogen and
hydrogen sulfide,
a DC voltage at 300 to 500V is applied relative to
an anode

disposed in a vacuum chamber under reduced pressure
and
a nitrosulphurization layer having a substantially
uniform thickness of about 30-300 μ m is formed on the surface,
with a Vickers hardness of 800-1200,
by using a bright nitrogen diffusion method,
wherein said member is at least one of a rotor,
cylinder, a front cylinder cover, and a rear cylinder cover;
and
wherein any difference of Vickers hardness value
between the mean value and either the maximum value or the
minimum value is no greater than 100;
~~The member of claim 1~~ wherein said Vickers hardness
is 700 or more under a load of 100 gf, said hardness extending
to a depth of 0.09 mm.

16. (Currently Amended) A member for air motors in
which the surface thereof, having a complex shape,
is heated at 450 to 580°C in a mixed gas atmosphere
comprising 50 to 95% of hydrogen, and 5-50% of nitrogen and
hydrogen sulfide,
a DC voltage at 300 to 500V is applied relative to
an anode

disposed in a vacuum chamber under reduced pressure
and
a nitrosulphurization layer having a substantially
uniform thickness of about 30-300 μ m is formed on the surface,
with a Vickers hardness of 800-1200,
by using a bright nitrogen diffusion method,
wherein said member is at least one of a rotor,
cylinder, a front cylinder cover, and a rear cylinder cover;
and
wherein any difference of Vickers hardness value
between the mean value and either the maximum value or the
minimum value is no greater than 100;
~~The member of claim 1~~ wherein the hardness of the
nitrosulfurization layer continuously decreases from a maximum
on said surface to a depth of 0.14mm.

17. (Previously Presented) A member for air motors
in which the surface thereof, having a complex shape,
is heated at 450 to 580°C in a mixed gas atmosphere
comprising 50 to 95% of hydrogen, and 5-50% of nitrogen and
hydrogen sulfide,
a DC voltage at 300 to 500V is applied relative to
an anode

disposed in a vacuum chamber under reduced pressure
and

a nitrosulphurization layer having a substantially
uniform thickness of about 30-300 μm is formed on the surface,
with a Vickers hardness of 800-1200,

by using a bright nitrogen diffusion method,
wherein said member is at least one of a rotor,
cylinder, a front cylinder cover, and a rear cylinder cover;
and

wherein the nitrosulfurization layer extends to a
depth of 0.09 mm.

18. (Previously Presented) A member for air motors
in which the surface thereof, having a complex shape,

is heated at 450 to 580°C in a mixed gas atmosphere
comprising 50 to 95% of hydrogen, and 5-50% of nitrogen and
hydrogen sulfide,

a DC voltage at 300 to 500V is applied relative to
an anode

disposed in a vacuum chamber under reduced pressure
and

a nitrosulphurization layer having a substantially
uniform thickness of about 30-300 μm is formed on the surface,
with a Vickers hardness of 800-1200,

by using a bright nitrogen diffusion method,
wherein said member is at least one of a rotor,
cylinder, a front cylinder cover, and a rear cylinder cover;
and

wherein said Vickers hardness is 700 or more under a
load of 100 gf, said hardness extending to a depth of 0.09 mm.

19. (Previously Presented) A member for air motors
in which the surface thereof, having a complex shape,
is heated at 450 to 580°C in a mixed gas atmosphere
comprising 50 to 95% of hydrogen, and 5-50% of nitrogen and
hydrogen sulfide,

a DC voltage at 300 to 500V is applied relative to
an anode

disposed in a vacuum chamber under reduced pressure
and

a nitrosulphurization layer having a substantially
uniform thickness of about 30-300 μm is formed on the surface,
with a Vickers hardness of 800-1200,

by using a bright nitrogen diffusion method,
wherein said member is at least one of a rotor,
cylinder, a front cylinder cover, and a rear cylinder cover;
and

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wherein the hardness of the nitrosulfurication layer continuously decreases from a maximum on said surface to a depth of 0.14mm.